```
FILE 'HOME' ENTERED AT 18:38:12 ON 29 SEP 2005

=> Index chemistry bioscience dissabs
FILE 'ENCOMPLIT2' ACCESS NOT AUTHORIZED
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

INDEX 'AGRICOLA, ALUMINIUM, ANABSTR, APOLLIT, AQUALINE, AQUIRE, BABS,
       BIOCOMMERCE, BIOTECHNO, CABA, CAOLD, CAPLUS, CBNB, CEABA-VTB, CEN, CERAB,
       CIN, COMPENDEX, CONFSCI, COPPERLIT, CORROSION, DISSABS, ENCOMPLIT,
       FEDRIP, GENBANK, INSPEC, INSPHYS, INVESTEXT, ...'
ENTERED AT 18:38:39 ON 29 SEP 2005

98 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> s (rhodium or ruthenium or palladium) (P) ((complex? or coordinat? or bind? or bound) (s)
(myoglobin or hemoglobin or hemeoxygenase catalase or cytochrome or ferritin ))
          2   FILE AGRICOLA
          0*  FILE ALUMINIUM
          1   FILE ANABSTR
          0*  FILE APOLLIT
          0*  FILE AQUALINE
         32*  FILE BABS
          0*  FILE BIOCOMMERCE
         34*  FILE BIOTECHNO
         12   FILE CABA
  10 FILES SEARCHED...
          0*  FILE CAOLD
        213   FILE CAPLUS
          0*  FILE CBNB
          2*  FILE CEABA-VTB
          3   FILE CEN
          1*  FILE CIN
         14*  FILE COMPENDEX
          3   FILE CONFSCI
          0*  FILE COPPERLIT
          0*  FILE CORROSION
         57   FILE DISSABS
          0*  FILE ENCOMPLIT
          8*  FILE FEDRIP
  25 FILES SEARCHED...
          9*  FILE INSPEC
          1*  FILE INSPHYS
          1   FILE IPA
         32   FILE JICST-EPLUS
          0*  FILE KOSMET
          0*  FILE METADEX
          1   FILE NIOSHTIC
          1*  FILE NTIS
  35 FILES SEARCHED...
         42*  FILE PASCAL
          6   FILE PROMT
          0*  FILE RAPRA
         96   FILE SCISEARCH
  43 FILES SEARCHED...
          0*  FILE WATER
          0*  FILE WELDASEARCH
          0*  FILE WSCA
          0*  FILE ADISNEWS
          0*  FILE ANTE
          2   FILE AQUASCI
          2*  FILE BIOENG
         86   FILE BIOSIS
          6*  FILE BIOTECHABS
```

```
        6*  FILE BIOTECHDS
        8   FILE CANCERLIT
  59 FILES SEARCHED...
        1   FILE DDFU
  64 FILES SEARCHED...
        1   FILE DRUGU
       63   FILE EMBASE
       57*  FILE ESBIOBASE
        0*  FILE FOMAD
        0*  FILE FOREGE
        0*  FILE FROSTI
        0*  FILE FSTA
        1   FILE HEALSAFE
       14   FILE IFIPAT
  75 FILES SEARCHED...
       32   FILE LIFESCI
       64   FILE MEDLINE
        0*  FILE NUTRACEUT
        0*  FILE PHARMAML
       23   FILE TOXCENTER
       59   FILE USPATFULL
        1   FILE USPAT2
  94 FILES SEARCHED...
       19   FILE WPIDS
       19   FILE WPINDEX

  41 FILES HAVE ONE OR MORE ANSWERS,   98 FILES SEARCHED IN STNINDEX

L1   QUE (RHODIUM OR RUTHENIUM OR PALLADIUM) (P) ((COMPLEX? OR COORDINAT? OR BI
       ND? OR BOUND) (S) (MYOGLOBIN OR HEMOGLOBIN OR HEMEOXYGENASE CATALASE O
       R CYTOCHROME OR FERRITIN ))

=> d rank
F1        213   CAPLUS
F2         96   SCISEARCH
F3         86   BIOSIS
F4         64   MEDLINE
F5         63   EMBASE
F6         59   USPATFULL
F7         57   DISSABS
F8         57*  ESBIOBASE
F9         42*  PASCAL
F10        34*  BIOTECHNO
F11        32   JICST-EPLUS
F12        32   LIFESCI
F13        32*  BABS
F14        23   TOXCENTER
F15        19   WPIDS
F16        19   WPINDEX
F17        14   IFIPAT
F18        14*  COMPENDEX
F19        12   CABA
F20         9*  INSPEC
F21         8   CANCERLIT
F22         8*  FEDRIP
F23         6   PROMT
F24         6*  BIOTECHABS
F25         6*  BIOTECHDS
F26         3   CEN
F27         3   CONFSCI
F28         2   AGRICOLA
F29         2   AQUASCI
F30         2*  CEABA-VTB
F31         2*  BIOENG
F32         1   ANABSTR
F33         1   IPA
F34         1   NIOSHTIC
F35         1   DDFU
F36         1   DRUGU
```

```
F37           1   HEALSAFE
F38           1   USPAT2
F39           1*  CIN
F40           1*  INSPHYS
F41           1*  NTIS


=> FIL F1-5 F7 F11-12 F14-17 F19 F21
COST IN U.S. DOLLARS                                  SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                       8.85       9.06

FILE 'CAPLUS' ENTERED AT 18:47:35 ON 29 SEP 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'SCISEARCH' ENTERED AT 18:47:35 ON 29 SEP 2005
Copyright (c) 2005 The Thomson Corporation

FILE 'BIOSIS' ENTERED AT 18:47:35 ON 29 SEP 2005
Copyright (c) 2005 The Thomson Corporation

FILE 'MEDLINE' ENTERED AT 18:47:35 ON 29 SEP 2005

FILE 'EMBASE' ENTERED AT 18:47:35 ON 29 SEP 2005
Copyright (c) 2005 Elsevier B.V. All rights reserved.

FILE 'DISSABS' ENTERED AT 18:47:35 ON 29 SEP 2005
COPYRIGHT (C) 2005 ProQuest Information and Learning Company; All Rights Reserved.

FILE 'JICST-EPLUS' ENTERED AT 18:47:35 ON 29 SEP 2005
COPYRIGHT (C) 2005 Japan Science and Technology Agency (JST)

FILE 'LIFESCI' ENTERED AT 18:47:35 ON 29 SEP 2005
COPYRIGHT (C) 2005 Cambridge Scientific Abstracts (CSA)


FILE 'TOXCENTER' ENTERED AT 18:47:35 ON 29 SEP 2005
COPYRIGHT (C) 2005 ACS

FILE 'WPIDS' ENTERED AT 18:47:35 ON 29 SEP 2005
COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE 'WPINDEX' ACCESS NOT AUTHORIZED

FILE 'IFIPAT' ENTERED AT 18:47:35 ON 29 SEP 2005
COPYRIGHT (C) 2005 IFI CLAIMS(R) Patent Services (IFI)

FILE 'CABA' ENTERED AT 18:47:35 ON 29 SEP 2005
COPYRIGHT (C) 2005 CAB INTERNATIONAL (CABI)

FILE 'CANCERLIT' ENTERED AT 18:47:35 ON 29 SEP 2005

=> S l1 and phosphin?
L2            9 FILE CAPLUS
L3            0 FILE SCISEARCH
L4            0 FILE BIOSIS
L5            0 FILE MEDLINE
L6            0 FILE EMBASE
L7            2 FILE DISSABS
L8            0 FILE JICST-EPLUS
L9            0 FILE LIFESCI
L10           0 FILE TOXCENTER
L11           0 FILE WPIDS
L12           0 FILE IFIPAT
L13           0 FILE CABA
L14           0 FILE CANCERLIT
```

```
TOTAL FOR ALL FILES
L15         11 L1 AND PHOSPHIN?

=> s L1 and (hydrogenat? or reduc?)
L16         80 FILE CAPLUS
L17         41 FILE SCISEARCH
L18         31 FILE BIOSIS
L19         29 FILE MEDLINE
L20         34 FILE EMBASE
L21         32 FILE DISSABS
L22          6 FILE JICST-EPLUS
L23          9 FILE LIFESCI
L24          9 FILE TOXCENTER
L25          9 FILE WPIDS
L26          5 FILE IFIPAT
L27          2 FILE CABA
L28          1 FILE CANCERLIT

TOTAL FOR ALL FILES
L29        288 L1 AND (HYDROGENAT? OR REDUC?)

=> S L1 and hydrogenat?
L30          3 FILE CAPLUS
L31          1 FILE SCISEARCH
L32          1 FILE BIOSIS
L33          0 FILE MEDLINE
L34          0 FILE EMBASE
L35          1 FILE DISSABS
L36          0 FILE JICST-EPLUS
L37          0 FILE LIFESCI
L38          0 FILE TOXCENTER
L39          0 FILE WPIDS
L40          2 FILE IFIPAT
L41          0 FILE CABA
L42          0 FILE CANCERLIT

TOTAL FOR ALL FILES
L43          8 L1 AND HYDROGENAT?

=> dup rem L29
PROCESSING COMPLETED FOR L29
L44        161 DUP REM L29 (127 DUPLICATES REMOVED)

=> D L15 1-11 ibib abs

L15  ANSWER 1 OF 11  CAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:         2005:185451  CAPLUS
DOCUMENT NUMBER:          142:276006
TITLE:                    Preparation of a metal complex-protein composite for
                          the use as a hydrogenation catalyst of an olefin
INVENTOR(S):              Watanabe, Yoshihito; Ueno, Takafumi; Abe, Satoshi
PATENT ASSIGNEE(S):       Nagoya Industrial Science Research Institute, Japan
SOURCE:                   U.S. Pat. Appl. Publ., 7 pp.
                          CODEN: USXXCO
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.          DATE
     ---------------      ----   --------    --------------------     --------
     US 2005049405         A1    20050303    US 2004-790060           20040302
     JP 2005075799         A2    20050324    JP 2003-310085           20030902
PRIORITY APPLN. INFO.:                       JP 2003-310085       A   20030902
OTHER SOURCE(S):          MARPAT 142:276006
AB   The metal complex-protein composite of the present invention includes a
     protein having a cavity and a metal complex and has a specific structure
     that the metal complex is received in the cavity of the protein.  Here the
     metal complex is prepared by complexation of a metal ion, which is selected
```

among the group consisting of rhodium, ruthenium, and palladium, with a ligand. The metal complex-protein composite of the invention functions as a hydrogenation catalyst of an olefin in water. The metal complex-protein composite is thus effectively applied to hydrogenation of water-soluble substrates and has environmental advantages over organic solvents. Preparation of rhodium complexes-apomyoglobin composites and their use as hydrogenation catalysts of olefins is disclosed.

L15 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:734455 CAPLUS
DOCUMENT NUMBER: 142:168270
TITLE: Palladium(II) and platinum(II) complexes with mixed ligands of tertiary monophosphines and 5-phenyl-1,3,4-oxadiazole-2-thione or 4,5-diphenyl-1,2,4-triazole-3-thione
AUTHOR(S): Qadir, Adnan M.; Abdullah, Ali I.; Al-jibor, Subhi A.; Al-Allaf, Talal A. K.
CORPORATE SOURCE: Department of Chemistry, College of Basic Sciences, Applied Science University, Amman, 1193, Jordan
SOURCE: Asian Journal of Chemistry (2004), 16(2), 1181-1188
CODEN: AJCHEW; ISSN: 0970-7077
PUBLISHER: Asian Journal of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Several new **palladium**(II) and platinum(II) **complexes** containing two types of ligands: tertiary monophosphines (L) and 5-phenyl-1,3,4-oxadiazole-2-thione (HA) or 4,5-diphenyl-1,2,4-triazole-3-thione (**HB**) were prepared The so obtained complexes trans-[PdA2L2], trans-[PdB2L2] and cis-[PtA2L2] were characterized by elemental anal., IR, UV-visible, 31P NMR spectroscopy, molar conductance and magnetic susceptibility measurements.
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:156420 CAPLUS
DOCUMENT NUMBER: 141:174283
TITLE: A series of vinylidene-, vinyl-, carbene- and carbyneruthenium(II) complexes with [Ru(PCy3)2] and [Ru(PiPr3)2] as molecular building blocks
AUTHOR(S): Jung, Stefan; Ilg, Kerstin; Brandt, Carsten D.; Wolf, Justin; Werner, Helmut
CORPORATE SOURCE: Institut fuer Anorganische Chemie der Universitaet Wuerzburg, Wuerzburg, 97074, Germany
SOURCE: European Journal of Inorganic Chemistry (2004), (3), 469-480
CODEN: EJICFO; ISSN: 1434-1948
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 141:174283
AB The hydrido(vinylidene) complexes [RuHCl(:C:CHR)(L)2] (R = H, tBu, Ph; L = PCy3, PiPr3) undergo metathesis reactions in the presence of KX (X = I, NCO, OPh, CH3CO2, CF3CO2) to give the substitution products [RuHX(:C:CHR)(L)2] in good to excellent yields. Treatment of [RuHX(:C:CHR)(L)2] with HBF4 in di-Et ether affords the cationic carbyneruthenium(II) derivs. [RuHX(.tplbond.CCH2R)(OEt2)(L)2]BF4 and [RuH(κ2-O2CCH3)(.tplbond.CCH2R)(L)2]BF4. The reactions of [RuHCl(:C:CHR)(L)2] with MX [X = BF4, PF6, BPh4, B(Arf)4] in acetonitrile lead to the formation of cationic five- and six-coordinate vinylruthenium(II) compds. of which [Ru(CH:CH2)(CH3CN)2(PCy3)2]BPh4 has been characterized by x-ray crystallog. The starting material [RuHCl(:C:CHPh)(PiPr3)2] reacts with CO to give [RuCl(CH:CHPh)(CO)2(PiPr3)2] and with N2 to produce [RuCl(CH:CHPh)(N2)(PiPr3)2] (crystal structure). Protonation of [Ru(CH:CH2)(CH3CN)2(PCy3)2]X and [Ru(CH:CHPh)(CH3CN)3(PiPr3)2]X with HBF4 and **HB**(Arf)4 yields the dicationic carbene **ruthenium** (II) **complexes** [Ru(:CHCH3)(CH3CN)2(PCy3)2]X2 and [Ru(:CHCH2Ph)(CH3CN)3(PiPr3)2] [B(Arf)4]2, the latter of which eliminates

styrene to give [Ru(CH3CN)3(PiPr3)2][B(Arf)4]2.
REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:682077 CAPLUS
DOCUMENT NUMBER: 138:347831
TITLE: Compounds of general interest. Chloro(hydrotris(pyrazol-1-yl)borato)bis(triphenylphosphine)ruthenium(II) {RuCl[κ3-HB(pz)3](PPh3)2} (pz = pyrazol-1-yl)
AUTHOR(S): Hill, Anthony F.; Wilton-Ely, James D. E. T.; Rauchfuss, Thomas B.; Schwartz, Daniel E.
CORPORATE SOURCE: Department of Chemistry, Imperial College of Science, Technology and Medicine, London, SW7 2AY, UK
SOURCE: Inorganic Syntheses (2002), 33, 206-208
CODEN: INSYA3; ISSN: 0073-8077
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 138:347831
AB RuCl[κ3- **HB**(pz)3](PPh3)2 **complex** was synthesized on a large scale (10 g) and was characterized. The procedure is based on the reaction of dichlorotris(triphenylphosphine)**ruthenium**(II) with hydrotris(pyrazol-1-yl)borate K salt.
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 5 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:639825 CAPLUS
DOCUMENT NUMBER: 131:345704
TITLE: The sting of the scorpion: a metallaboratrane
AUTHOR(S): Hill, Anthony F.; Owen, Gareth R.; White, Andrew J. P.; Williams, David J.
CORPORATE SOURCE: Department of Chemistry, Imperial College of Science, Technology, and Medicine, London, SW72AY, UK
SOURCE: Angewandte Chemie, International Edition (1999), 38(18), 2759-2761
CODEN: ACIEF5; ISSN: 1433-7851
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The novel ruthenaboratrane **complex** [Ru{B(mt)3}(CO)(PPh3)] (4, mt = 2-sulfanyl-1-methylimidazolyl) was prepared from the reaction of [Ru(CH:CHCPh2OH)Cl(CO)(PPh3)2] with Na[**HB**(mt)3] and characterized spectroscopically and by x-ray crystallog. (4·2CHCl3: triclinic, space group P.hivin.1, R1 = 0.049). The complex has a Ru→B bond of 2.161(5) Å, resulting in a tetrahedral geometry for boron, and **ruthenium** is octahedral. This complex is the first example of a poly(azolyl)borate ligand that undergoes B-H activation (stinging of the "scorpionate") to give this metallaboratrane structure.
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:184831 CAPLUS
DOCUMENT NUMBER: 128:270700
TITLE: Polyazolyl Chelate Chemistry. 6. Bidentate **Coordination** of **HB**(pz)3 (pz = Pyrazol-1-yl) to **Ruthenium** and Osmium: Crystal Structure of [RuH(CO)(PPh3)2{κ2-**HB**(pz)3}]
AUTHOR(S): Burns, Ian D.; Hill, Anthony F.; White, Andrew J. P.; Williams, David J.; Wilton-Ely, James D. E. T.
CORPORATE SOURCE: Department of Chemistry, Imperial College of Science Technology and Medicine, London, SW7 2AY, UK
SOURCE: Organometallics (1998), 17(8), 1552-1557
CODEN: ORGND7; ISSN: 0276-7333
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal
LANGUAGE: English
AB The reactions of [RuHCl(CO)(PPh3)3], [Ru(SnPh3)Cl(CO)(PPh3)2], or [RuH(CO)(NCMe)2(PPh3)2]BF4 with K[HB(pz)3] (pz = pyrazol-1-yl) provide the crystallog. characterized complex [RuH(CO)(PPh3)2{η2-HB(pz)3}], thermolysis of which proceeds via loss of **phosphine** and formation of [RuH(CO)(PPh3){η3-HB(pz)3}]. The thiocarbonyl analog [RuH(CS)(PPh3)2{η2-HB(pz)3}] is similarly obtained by the reaction of [RuHCl(CS)(PPh3)3] and K[HB(pz)3], thermolysis of which provides [RuH(CS)(PPh3){η3-HB(pz)3}]. Hydride metathesis in CHCl3 of this species provides [RuCl(CS)(PPh3){η3-HB(pz)3}]. [RuH(CS)(PPh3)2{η2-H2B(bta)2}] (bta = benzotriazolyl) results from the reaction of [RuHCl(CS)(PPh3)3] with K[H2B(bta)2]. The hydride-bridged dinuclear complex [RuCu(μ-H)(CO)(PPh3)2{η3-HB(pz)3}]PF6 results in high yield from the reaction of [RuH(CO)(PPh3)2{η2-HB(pz)3}], with [Cu(NCMe)4]BF4. The σ-Ph complex [OsPh(CO)(PPh3)2{η2-HB(pz)3}] results from the reaction of [OsPhCl(CO)(PPh3)2] with K[HB(pz)3] and is cleanly converted with heating to [OsPh(CO)(PPh3){η3-HB(pz)3}].
REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:441104 CAPLUS
DOCUMENT NUMBER: 127:144294
TITLE: Synthesis and reactivity of [Ru{HB(pz)3}{P(C6H11)3}Cl(OCH2R)] (pz = pyrazolyl, R = H or Me)
AUTHOR(S): Gemel, Christian; Kickelbick, Guido; Schmid, Roland; Kirchner, Karl
CORPORATE SOURCE: Institute of Inorganic Chemistry, Technical University of Vienna, Vienna, A-1060, Austria
SOURCE: Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry (1997), (12), 2113-2117
CODEN: JCDTBI; ISSN: 0300-9246
PUBLISHER: Royal Society of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB [Ru{**HB**(pz)3}(cod)Cl] (1) (cod = cycloocta-1,5-diene) reacted with P(C6H11)3 (≥1 equiv) in boiling DMF to give the highly air-sensitive intermediate [Ru{**HB**(pz)3}{P(C6H11)3}Cl(DMF)] which, on exposure to air in either ethanol or methanol as the solvent, was converted to the **ruthenium**(III) **complexes** [Ru{**HB**(pz)3}{P(C6H11)3}Cl(OCH2R)] (R = Me 2a or H 2b) in good yields. 2B was characterized by x-ray crystallog. (triclinic, space group P.hivin.1, R = 0.038). Treatment of 2a or 2b with L = MeCN, pyridine, CO, P(OMe)3, or PMe3 in CH2Cl2 afforded the (diamagnetic) **ruthenium** (II) compds. [Ru{HB(pz)3}{P(C6H11)3}(Cl)L] (3-7). Most remarkably, 2a or 2b reacted also with terminal alkynes HC.tplbond.CR (R = Ph, CO2Et, Bu or SiMe3) giving the neutral vinylidene **complexes** [Ru{**HB**(pz)3}{P(C6H11)3}Cl(=C=CHR)] (8-11). Preliminary results of a study of the catalytic activity of 2 are also presented. Thus, 2a and 2b catalyzed the dimerization of some terminal alkynes HC.tplbond.CR (R = Ph, CO2Et or SiMe3).
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:402118 CAPLUS
DOCUMENT NUMBER: 127:144256
TITLE: Hydride, dihydrogen, dinitrogen and related **complexes** of **ruthenium** containing the ligand hydrotris(pyrazolyl)borate. X-ray crystal structure of [{**HB**(pz)3}Ru(η2-H2)(dippe)][BPh4] (dippe = 1,2-bis(diisopropylphosphino)ethane)
AUTHOR(S): Jimenez Tenorio, Manuel; Jimenez Tenorio, Miguel Angel; Puerta, M. Carmen; Valerga, Pedro
CORPORATE SOURCE: Dept. de Ciencia de Materiales e Ingenieria Metalurgica y Quimica Inorganica, Facultad de

Ciencias, Universidad de Cadiz, Aptdo. 40, 11510, Puerto Real, Cadiz, Spain
SOURCE: Inorganica Chimica Acta (1997), 259(1-2), 77-84
CODEN: ICHAA3; ISSN: 0020-1693
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB [{HB(pz)3}RuCl(PPh3)2] reacts with one equivalent of dippe (1,2-bis(diisopropylphosphino)ethane) in toluene to yield [{HB(pz)3}RuCl(dippe)]. This compound reacts with NaBH4 in MeOH furnishing the monohydride [{HB(pz)3}RuH(dippe)], whereas [{HB(pz)3}RuH(PPh3)2] was obtained by reaction of [RuHCl(PPh3)3] with K[HB(pz)3]. Both monohydride complexes are protonated by HBF4·OEt2 at -80° to give the corresponding dihydrogen adducts [{HB(pz)3}Ru(H2)(dippe)]+ and [{HB(pz)3}Ru(H2)(PPh3)2]+, as inferred from longitudinal relaxation time (T1) and 1J(H,D) measurements. The latter complex is unstable and decomps. at room temperature, but the former is a stable species which does not rearrange to the dihydride form when the temperature is raised. The x-ray crystal structure of [{HB(pz)3}Ru(H2)(dippe)][BPh4] was determined (monoclinic, space group P21/c, R = 0.057). The dihydrogen ligand in this compound is labile, and readily replaced by a range of neutral donor mols., yielding the corresponding complexes [{HB(pz)3}Ru(L)(dippe)][BPh4] (L = CO, CNBut, Me2CO, THF, N2). There is also supporting evidence for the formation of a paramagnetic RuIII methoxide complex, [{HB(pz)3}Ru(OMe)(dippe)][BPh4]. All compds. were characterized by IR, NMR and microanal.
REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:60763 CAPLUS
DOCUMENT NUMBER: 126:69230
TITLE: Syntheses and Characterization of Hydrotris(1-pyrazolyl)borate Dihydrogen Complexes of Ruthenium and Their Roles in Catalytic Hydrogenation Reactions
AUTHOR(S): Chan, Wai-Chung; Lau, Chak-Po; Chen, Yu-Zhong; Fang, Yi-Qun; Ng, Siu-Man; Jia, Guochen
CORPORATE SOURCE: Department of Applied Biology Chemical Technology, Hong Kong Polytechnic University, Kowloon, Hong Kong
SOURCE: Organometallics (1997), 16(1), 34-44
CODEN: ORGND7; ISSN: 0276-7333
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB New hydrotris(1-pyrazolyl)borate complexes of **ruthenium** were synthesized. Reaction of RuCl(**HB**(pz)3)(PPh3)2 (1) with NaBH4 in ethanol produced the yellow monohydride **complex** RuH(**HB**(pz)3)(PPh3)2 (2). Protonation of 2 with HBF4·Et2O in dichloromethane gave the mol. dihydrogen **complex** [Ru(**HB**(pz)3)(PPh3)2(H2)]BF4 (3). Reactions of 3 with L produced [Ru(HB(pz)3)(PPh3)2(L)]BF4 (L = CH3CN (4), H2O (5), N2). 3 Could be regenerated by reactions of 4 or 5 with pressurized H2. Deprotonation of 3 occurred with NEt3 or H2O under hydrogen pressure. Treatment of 1 with LiBF4 in acetonitrile produced the bis-solvento **complex** [Ru(**HB**(pz)3)(PPh3)(CH3CN)2]BF4 (6). Heating a THF/CH3CN (9/1) solution of 1 at 60° gave RuCl(HB(pz)3)(PPh3)(CH3CN) (7). Reaction of 7 with NaBH4 in THF produced the yellow monohydride **complex** RuH(**HB**(pz)3)(PPh3)(CH3CN) (8). Acidification of the monohydride 8 with HBF4·Et2O yielded [Ru(HB(pz)3)(PPh3)(CH3CN)(H2)]BF4 (9). Both complexes 4 and 6 are active catalysts for the hydrogenation of olefins in either anhydrous or hydrous THF. Enhanced catalytic activities were observed in the presence of water or NEt3. Deuterium was incorporated into the catalytic hydrogenation products when D2O was present in the reaction mixture The enhanced catalytic activity in the presence of water, and incorporation of deuterium in the hydrogenation products, could be best explained with mechanisms which involve dihydrogen complexes.
REFERENCE COUNT: 73 THERE ARE 73 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 10 OF 11 DISSABS COPYRIGHT (C) 2005 ProQuest Information and

ACCESSION NUMBER: 93:45769 DISSABS Order Number: AAR9317299
TITLE: REACTIVITY OF (OXO)(**PHOSPHINE**)RUTHENIUM(IV) AND (AQUA)(**PHOSPHINE**)RUTHENIUM(II) COMPLEXES: MECHANISMS OF THE OXIDATION OF ORGANIC SUBSTRATES AND LIGAND SUBSTITUTION (ORGANIC SUBSTRATE OXIDATION, OXO(**PHOSPHINE**)RUTHENIUM(IV), (AQUA)(**PHOSPHINE**)RUTHENIUM(II))
AUTHOR: ACQUAYE, JOHN HENRY [PH.D.]; TAKEUCHI, KENNETH J. [advisor]
CORPORATE SOURCE: STATE UNIVERSITY OF NEW YORK AT BUFFALO (0656)
SOURCE: Dissertation Abstracts International, (1993) Vol. 54, No. 4B, p. 1953. Order No.: AAR9317299. 169 pages.
DOCUMENT TYPE: Dissertation
FILE SEGMENT: DAI
LANGUAGE: English
ENTRY DATE: Entered STN: 19930920
Last Updated on STN: 19930920

AB The reactivity of the oxo(**phosphine**)**ruthenium**(IV) complexes, $\rm\lbrack Ru(bpy)\sb2 (O)PR\sb3\rbrack (ClO\sb4)\sb2$ (where bpy = 2,2$\sp\prime$-bipyridine and $\rm PR\sb3 = P(C\sb6H\sb5)\sb3,$ P(p-$\rm C\sb6H\sb4OCH\sb3)\sb3,$ P(p-$\rm C\sb6H\sb4CH\sb3)\sb3$, P(p-$\rm C\sb6H\sb4F)\sb3$, $\rm P(C\sb6H\sb5)($p-$\rm C\sb6H\sb4CF\sb3)\sb2$, and P(p-$\rm C\sb6H\sb4CF\sb3)\sb3)$ in the oxidation of sulfides, sulfoxides, alcohols and teritary anilines was investigated. In addition, the aqua ligand substitution by acetonitrile in the (aqua)(**phosphine**)**ruthenium**(II) complexes was investigated in aqueous medium.

For the oxidation of sulfides to sulfoxides, an excellent correlation (R$\sp2$ = 0.99) was obtained between log ($k\sb{\rm X}/k\sb{\rm H}$) and the σ values for the substituents of para-substituted thioanisoles (ρ = $-$1.56). For the oxidation of sulfoxides to sulfones, a good correlation (R$\sp2$ = 0.98) was obtained between log ($k\sb{\rm X}/k\sb{\rm H}$) and the $\sigma\sp{+}$ values for the substituents of para-substituted methyl phenyl sulfoxides (ρ = $-$0.42). In addition, the kinetic isotope effect for the oxidation of thioanisole and methyl-$d\sb3$ phenyl sulfide produced $k\sb{\rm H}/k\sb{\rm D}$ = 1.14, and the oxidation of methyl phenyl sulfoxide and methyl-$d\sb3$ phenyl sulfoxide resulted in an inverse isotope effect of $k\sb{\rm H}/k\sb{\rm D}$ = 0.64. Hammett correlations of log ($k\sb{\rm X}/k\sb{\rm H}$) versus $\Sigma\sigma$ (where σ is the Hammett substituent constant for each of the para-substituents on the triphenylphosphine ligands) also show linear relationships. The slopes of these plots gave ρ = 0.49 (R$\sp2$ = 0.99) for the oxidation of thioanisole and ρ = 0.37 (R$\sp2$ = 0.99) for the oxidation of methyl phenyl sulfoxide by the $\rm{\lbrack Ru(bpy)\sb2(O)PR\sb3\rbrack (ClO\sb4)\sb2}$ complexes. The results of all our experiments suggest that the rate determining step in the oxidation of thioanisole by $\rm \lbrack Ru(bpy)\sb2(O)P(C\sb6H\sb5)\sb3\rbrack (ClO\sb4)\sb2$ involves primarily single electron transfer, whereas the rate determining step of the oxidation of methyl phenyl sulfoxide involves primarily an S$\sb{\rm N}$2 mechanism.

There were not good correlations for plots of log$k\sb{\rm X}/k\sb{\rm H}$ versus the Hammett substituent constants $\sigma,\ \sigma\sp+$ or $\sigma\sp{-}$ for the oxidation of the para-substituted benzyl alcohols by $\rm{\lbrack Ru(bpy)\sb2(O)P(C\sb6 H\sb5)\sb3\rbrack (ClO\sb4)\sb2}$. However, the plot of log$\rm{{\it k}\sb{X}/{\it k}\sb{H}}$ - $\sigma\sp{\cdot}$ versus $\sigma\sp-$ (where $\sigma\sp{\cdot}$ is the free radical stabilization constant), gave an excellent correlation with ρ = $-$0.57, (R$\sp2$ = 0.99) for the oxidation of the para-substituted benzyl alcohols by ($\rm{Ru(bpy)\sb2(O)P(C\sb6 H\sb5)\sb3 \rbrack (ClO\sb4)\sb2}$ in methylene chloride. From these and other results, we propose a reaction pathway for the oxidation of benzyl alcohol by (oxo)**ruthenium**(IV) complexes which involves a partial hydrogen atom abstraction from the benzylic carbon in the rate determining step.

The features observed in the demethylation of the tertiary anilines by the (Ru(bpy)$\sb2$(O)(PR$\sb3)\rbrack\sp{2+}$ **complexes** resemble those of the **cytochrome** P-450 type oxygenation. (Abstract shortened by UMI.)

L15 ANSWER 11 OF 11 DISSABS COPYRIGHT (C) 2005 ProQuest Information and Learning Company; All Rights Reserved on STN

ACCESSION NUMBER: 93:32621 DISSABS Order Number: AAR9309867
TITLE: PROTON-COUPLED ELECTRON TRANSFER AND MULTIELECTRON OXIDATIONS IN COMPLEXES OF RUTHENIUM AND OSMIUM
AUTHOR: DOVLETOGLOU, ANGELOS [PH.D.]; MEYER, THOMAS J. [advisor]
CORPORATE SOURCE: THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL (0153)
SOURCE: Dissertation Abstracts International, (1992) Vol. 54, No. 2B, p. 809. Order No.: AAR9309867. 285 pages.
DOCUMENT TYPE: Dissertation
FILE SEGMENT: DAI
LANGUAGE: English
ENTRY DATE: Entered STN: 19930722
Last Updated on STN: 19930722

AB My doctoral research concerns the mechanism of proton-coupled electron transfer over an extended pH range. The impetus for this study derives from the importance of such processes in biological systems. These processes between **ruthenium** and osmium complexes and hydroquinones have been studied by using spectrophotometric methods and cyclic voltammetry. Elucidation of the mechanistic details has been attempted by using isotopic labelling, kinetic analyses, and numerical simulation of complex kinetic schemes.

The coordination and redox chemistry of polypyridyl-acetylacetonato and -oxalato complexes of **ruthenium** and the role of ancillary ligands in defining the properties of Ru$\sp{\rm IV}$O complexes were explored. These studies represent the first attempt to probe possible 2e$\sp-$ oxidation by a Ru$\sp{\rm IV}$O/Ru$\sp{\rm II}$OH$\sb2$ couple. Using a test ligand in the coordination sphere the net result of the acac$\sp-$ ligand affecting the electron density at the metal center was examined. It was found that acac$\sp-$ can act as a σ donor, π donor, and π acceptor.

The synthesis and X-ray crystal structure of trans-(Ru$\sp{\rm VI}$(tpy)(O)$\sb2$(H$\sb2$O)) (ClO$\sb4)\sb2$ are described. The complexes trans-(Ru(tpy)(O)$\sb2$(H$\sb2$O)) $\sp{2+}$ and trans-(Ru(tpy)(O)$\sb2$(CH$\sb3$CN)) $\sp{2+}$ have been characterized by using UV-vis, $\sp1$H NMR, FTIR, and resonance Raman spectroscopy, and electrochemical techniques. Comparisons with the redox potentials for related couples and a thermodynamic analysis based on related **ruthenium** and structurally equivalent complexes of osmium revealed a number of features that will be useful in the rational design of metal ion redox catalysts.

A **complex** mechanistic study of a novel cis-directed four-electron oxidation by trans-Ru$\sp{\rm VI}$O$\sb2$ **complexes** involving double O-atom transfer to a single substrate was undertaken. The kinetics of nitrogen atom transfer reactions of an Os$\sp{\rm VI}$nitrido **complex** with **phosphines** was studied. A reactivity model was developed for metal-oxo epoxidation catalysts and **cytochrome** P-450, based on the kinetics and mechanisms of olefin epoxidation by Ru$\sp{\rm IV}$O and trans-Ru$\sp{\rm VI}$O$\sb2$.

The ((bpy)$\sb2$(O)Ru$\sp{\rm V}(\mu$-O)Ru$\sp{\rm V}$(O)(bpy)) $\sp{4+}$ complex represents the only well-defined molecular catalyst for water oxidation. This work describes the synthesis, characterization, and redox chemistry of ((tpy)(C$\sb2$O$\sb4$)Ru$\sp{\rm III}(\mu$-O)Ru$\sp{\rm III}$(C$\sb2$O$\sb4$)(tpy)) and ((tpy)(CO$\sb3$)Ru$\sp{\rm III}(\mu$-O)Ru$\sp{\rm III}$ (CO$\sb3$)(tpy)). In acidic solutions the oxalato ligand is lost providing a convenient synthetic route to the cis-((tpy)(H$\sb2$O)$\sb2$Ru$\sp{\rm III}$(μ-O)Ru$\sp{\rm III}$(H$\sb2$O)$\sb2$(tpy)) $\sp{4+}$.

=> D L44 1-161 ibib abs

WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Thursday, September 29, 2005

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC; THES=ASSIGNEE; PLUR=YES; OP=ADJ	
☐	L6	L3 and (myoglobin |hemoglobin|hemeoxygenase|catalase |cytochrome$\|$ferritin)	27
☐	L5	L3 and (apomyoglobin |apohemoglobin|apohemeoxygenase|apocatalase |apocytochrome|apoferritin)	1
☐	L4	hydrogenation with cataly$ same (ghodium |ruthenium| palladium |Pd) same complex$ same (apomyoglobin |apohemoglobin|apohemeoxygenase|apocatalase |apocytochrome|apoferritin)	0
☐	L3	hydrogenation with cataly$ same (ghodium |ruthenium| palladium |Pd) same complex$	2606
☐	L2	hydrogenation with cataly$ same (ghodium |ruthenium| palladium |Pd)	29767
☐	L1	hydrogenation same cataly$ same (ghodium |Ru|ruthenium|Ru| palladium |Pd)	33704

END OF SEARCH HISTORY

WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Thursday, September 29, 2005

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC; THES=ASSIGNEE; PLUR=YES; OP=ADJ	
☐	L5	(myoglobin|hemoglobin|hemeoxygenase|catalase|cytochrome|ferritin) same ((rhodium |Rh|ruthenium|Ru|palladium|Pd) same (cavity |pocket?|coordinat$))	17
☐	L4	L3 and complex$	141
☐	L3	L2 and (cavity |pocket?|coordinat$)	142
☐	L2	L1 and apo$	187
☐	L1	(myoglobin|hemoglobin|hemeoxygenase|catalase|cytochrome|ferritin) same (rhodium Rh|ruthenium|Ru|palladium|Pd)	437

END OF SEARCH HISTORY